

Patent Application Serial No. 10/578,871
Reply to Office Action of June 16, 2008

REMARKS

Amendments. The independent claims are amended for greater clarity (e.g., reciting a keyboard as well as its keys), and also by rearranging and making changes in terminology (e.g., “detector” for “detecting means”). Claims 7 and 8 are canceled without prejudice to reentry and are recast as new claims 9 and 10 depending from method claim 4.

One specific feature that is added is “when not every other key of the keyboard is already depressed.” This feature is supported in both the original claims and the specification. The Examiner is invited to consider:

(1) The original claim language, “detecting whether a key ... is already depressed *or not*,” would be redundant if all the other keys were already depressed. Therefore, the original claims cover the case when *not* every key is depressed (as if by a damper pedal).

(2) The specification, likewise, discloses deciding if an *individual* key is depressed. It states at page 13, line 10, “As shown in the flow chart in Fig. 3, after a process is started, a presence/absence of an occurrence of a key-on event (key playing) is detected by the keyboard scanning circuit 105a at a first step S31. When the panel scanning circuit 104a detects that a key playing operation is performed, it goes to a step S32 to detect whether another key is depressed *or not* at the time the key is played, by the key depression state detecting means” (*italics added*). If all of the keys were already depressed, as by a damper pedal, then there would be no need to determine whether another key were depressed, or not.

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(3) No damper pedal is disclosed by the Applicant, which implies that the Applicant did not consider the case of all keys being depressed. Based on the Applicant's disclosure alone, a person who wanted to depress all the keys would need to rig a specially-shaped board-like fixture, able to hold down both black and white keys, with a hole for the particular key to be played; one such fixture would be required for each and every key that was to be played. If the Applicant had contemplated the case of all other keys depressed, such a contraption would have been mentioned, or else the pedal would have been mentioned—and there is no such mention. None of the words “pedal,” “damper,” or “sustain” appears in the specification (determined by computer word search). Thus, the instant disclosure excludes the case of all other keys depressed, by implication.

(4) Even if, for arguments' sake, the application is taken as disclosing the case of all other keys being depressed, it still undoubtedly also discloses the case of other keys *not* being depressed, and the Applicant is free to claim one of two disclosed alternatives.

Kosecki. As the Applicant previously noted, Kosecki only discloses generating those sounds corresponding to the sound made by a played key when the damper (sustain) pedal is actuated. For example, Kosecki states at col. 6, lines 26-34, that resonance is generated while “the damper pedal was fully depressed.”

Furthermore, Kosecki nowhere states that there are keys whose strings do *not* resonate, when the sustain pedal is held down. Kosecki states at col. 2, line 6, “While the damper pedal is [held], the vibration of the struck strings are propagated to related strings, and the related strings strongly resonate with the set of strings struck by the hammer.” Kosecki here states that “related” strings “strongly” resonate, but this statement does not

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exclude a weaker resonance of other "unrelated" strings (if any—Kosecki nowhere mentions any are un-related strings).

The Examiner is invited to consider the following: Strings which are related to a played string by a frequency ratio that is near to a simple fraction (e.g., C and G, fraction nearly 2:3) might be expected to resonate more strongly than other strings. However, there is no string that is completely unrelated in frequency to a played string—that is, for any played string, there is no string that does not bear *some* numerical relationship to the played string, and therefore there is no string that will be completely un-excited.

The Examiner will recall that each note of the scale can be reached by the circle of fifths (that is, G is the 5th of C, D is the 5th of G, A is the 5th of D, and so), and this fact shows that every note is in a ratio to any played note, where the ratio is approximated by a power of 3/2 (approximated because of equal temperament). Thus, all of the strings are related in frequency by fractions and *all* will be excited, to some degree, when a played key is struck.

Furthermore, Kosecki obtains its resonance sounds by recording a real piano (col. 6, lines 26-37), and just the impact associated with playing a key will excite each string to vibrate slightly, since an impact contains every frequency and will excite each string equally (by Fourier analysis).

Thus, Kosecki does not disclose, either directly or by implication, that there are any strings that will fail to resonate when a key is struck, and it follows that Kosecki does not anticipate the Applicant's claims that recite a case in which not every string resonates, because the strings of those keys which are not already depressed are damped.

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On the basis of the present amendment and the arguments above, the Examiner is requested to withdraw the rejection of claims under 35 U.S.C. §102(b) over Kosecki et al, US 5,804,751.

Respectfully submitted,

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